

# Roy Luo

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## EDUCATION

### University of Waterloo

*Honours Mathematics, Coop*

Waterloo, Ontario

*September 2023 – April 2027*

### McMaster University

*Mathematics and Statistics*

Hamilton, Ontario

*September 2022 – April 2023*

## TECHNICAL SKILLS

**Languages:** Python, R, SQL

**Platforms and Tools:** PowerBI, Excel, Git

**Libraries:** pandas, NumPy, scipy, sklearn, Matplotlib, tidyverse, ggplot2

## EXPERIENCE

### Investment Risk Analyst Intern

*Healthcare of Ontario Pension Plan*

January 2024 – April 2024

*Toronto, ON*

- Automated dynamic hedging calculations using Python, reducing manual processing time by 10 hours a week and delivering 100% reporting accuracy.
- Bootstrapped market data to construct time series datasets in Excel, used for 10,000 Monte Carlo simulations to enhance accuracy and reliability of VaR assessments.
- Engineered a stress testing tool that evaluated the impact of real rate fluctuations on billions in both liabilities and fixed-income holdings using data from Snowflake, SAP HANA and SQL Server.
- Streamlined the process for generating liquidity risk reports using matplotlib, reducing the turnaround time by 33% and ensuring compliance with financial regulations.

### Simcorp Dimension Intern

*Precision Insight Consulting*

May 2023 – August 2023

*Markham, ON*

- Imported equity/bond trades using built-in tools, mapping them to transaction codes and performing instrument type validation with a 99.5% accuracy rate.
- Configured and managed batch jobs for data extraction, optimizing data handling and processing efficiency and saving 15 hours per month of manual work.
- Constructed reference files documenting daily CAD/USD settlements in Excel and NAV reconciliation reports in Python, reducing reporting errors by 100% and enhancing data accessibility and accuracy for further analytical purposes.
- Managed, reviewed, and allocated Jira tickets, resulting in a 95% resolution rate while ensuring seamless coordination and improved team productivity.

## PROJECTS

### Live Bitcoin Orderbook Dashboard | *R, SQL Server, PowerBI*

- Developed an R script to extract, clean and reformat live orderbook data from a websocket feed transmitting 25000+ Bitcoin orders a minute.
- Uploaded and stored data in SQL Server, which was loaded into PowerBI using DirectQuery, resulting in a 50% reduction in dashboard loading time compared to traditional data loading methods.
- Maintained a near real-time cryptocurrency orderbook dashboard with a refresh rate of 1 second, displaying important metrics like mid-market rate, order prices, market depth, and bid-ask spread.

### League of Legends Churn Analysis | *Python, pandas, sklearn*

- Leveraged a REST API to collect extensive gameplay data, including match statistics and player attributes for over 1,000 new players.
- Implemented and optimized machine learning models, including logistic regression, decision tree, random forests, and neural networks, achieving up to 78% accuracy in predicting player retention.
- Engineered relevant features and applied dimensionality reduction techniques like principal component analysis (PCA) to extract important patterns and reduce data complexity, achieving up to 95.75% variance explained.